

## ABSTRACT

A method is provided for automatically separating tooth crowns and gingival tissue in a virtual three-dimensional model of teeth and associated anatomical structures. The method orients the model with reference to a plane and automatically determines local maxima of the model and areas bounded by the local maxima. The method automatically determines saddle points between the local maxima in the model, the saddle points corresponding to boundaries between teeth. The method further positions the saddle points along a dental arch form. For each tooth, the method automatically identifies a line or path along the surface of the model linking the saddle points to each other, the path marking a transition between teeth and gingival tissue and between adjacent teeth in the model. The areas bounded by the lines correspond to the tooth crowns; the remainder of the model constitutes the gingival tissue.